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(54) Title: CROP OIL CONCENTRATE ADJUVANTS CONTAINING AMINE SURFACTANTS

(57) **Abstract:** In agricultural practice it is known to use emulsifiable oils (commonly referred to a Crop Oil Concentrates, COC) as bioefficacy enhancers for pesticides, especially herbicides. Cationic surfactants are widely known to be particularly effective bio-active enhancers for herbicides, especially for glyphosate-type herbicides. The present invention includes two novel aspects: 1) While the vast majority of COCs are petroleum-based paraffinic oils or esterified seed oils, this invention embodies a new oil phase, a hydrocarbon oil such exemplified by EXXON-MOBIL'S D-130, which when combined with the surfactants described herein, exhibits surprising enhancement of herbicidal activity in field tests; and 2) COC's are designed to form stable emulsions in water. The combination of cationic surfactants and phosphate esters in this invention not only form very stable emulsions in water, but, surprisingly, also form extremely stable emulsions in concentrated liquid fertilizers, including 32-0-0 fertilizer.



WO 2005/084437 A1